CONVERSION OF LOW NO_x CONCENTRATIONS IN COMBUSTION GASES TO NITRIC ACID OR FERTILIZER USING HYDROGEN PEROXIDE AND LYB

ABSTRACT OF THE DISCLOSURE

A process for reducing NO_x emissions in a gaseous combustion effluent stream containing NO and/or NO_2 includes the steps of: a) adding hydrogen peroxide to the effluent stream in sufficient amounts to generate nitric acid by first stage reactions as follows:

$$2NO + H_2O_2 + O_2 ----- > 2HNO_3$$

 $2NO_2 + H_2O_2 ---- > 2HNO_3$
 $2NO + 2NO_2 + O_2 + 2H_2O_2 --- > 4HNO_3$;

and optionally, after the nitric acid is generated, adding sufficient amounts of potassium hydroxide to the effluent stream to generate potassium nitrate in second stage reactions as follows:

```
2HNO<sub>3</sub> + 2KOH ------> 2KNO<sub>3</sub> + 2H<sub>2</sub>O
4HNO<sub>3</sub> + 4KOH -----> 4KNO<sub>3</sub> + 4H<sub>2</sub>O.
```